

CLAIMS

1. A recording apparatus for recording second address information and second information in an information recording medium to update first information recorded in the information recording medium to the second information by updating first address information recorded in the information recording medium to the second address information,

wherein the first address information includes a first address indicating at least a part of locations of the information recording medium at which the first information is recorded,

the second address information includes a second address indicating at least a part of locations of the information recording medium at which the second information is to be recorded,

the recording apparatus comprises a host apparatus and a drive apparatus,
the host apparatus includes a system control section for controlling the drive apparatus,

the drive apparatus includes a head section for performing a recording operation or a reproduction operation for the information recording medium and a drive control section for controlling the head section,

the system control section generates an update instruction including a third address indicating at least a part of the locations of the information recording medium at which the first address information is recorded and the second address information as an update instruction for updating the first address information to the second address information, and outputs the update instruction to the drive apparatus, and

the drive control section receives the update instruction from the host apparatus,

the drive control section, in accordance with the update instruction, controls the head section to record the second address information in the information recording medium, generates disc management information including correlation information which correlates the first address information with the second address information, and controls the head section to record the disc management information in the information recording medium, and

the drive control section controls the head section to record the second information in the information recording medium in accordance with the second address.

2. A recording apparatus according to claim 1, wherein the information recording medium is a write-once information recording medium.

3. A recording apparatus according to claim 1, wherein each of the first information and the second information includes at least a volume structure, the first address information includes at least an anchor volume descriptor pointer describing the first address, and

the second address information includes at least an anchor volume descriptor pointer describing the second address.

4. A recording apparatus according to claim 1, wherein the update instruction includes a record instruction and a generation instruction, and

the drive control section controls the head section to record the second address information in the information recording medium in accordance with the record instruction, generates the disc management information including the correlation information and controls the head section to record the disc management information in the information recording medium in accordance with the generation instruction.

5. A recording apparatus according to claim 4, wherein third address information including the first address is further recorded in the information recording medium.

6. A recording apparatus according to claim 4, wherein the record instruction for the second address information is issued for ECC block basis.

7. A recording apparatus according to claim 1, wherein the drive control section generates duplication information of the second address information, and controls the head section to record the duplication information of the second address information in the information recording medium.

8. A recording apparatus according to claim 7, wherein the location at which the duplication information of the second address information is recorded is at an inner location than the location at which the second address information is recorded.

9. A recording apparatus according to claim 1, wherein

the disc management information further includes status information indicating whether the correlation information is valid or invalid, and

the drive control section sets the status information to indicate that the correlation information is valid when the first address information has been updated to the second address information.

10. A recording apparatus according to claim 1, wherein the correlation information includes instruction information which instructs the drive control section to reproduce the second address information in response to the receipt of a reproduction instruction for the first address information.

11. A recording apparatus according to claim 1, wherein the first information includes a first metadata file, the second information includes a second metadata file, the first address information includes a file entry of the first metadata file, and the second address information includes a file entry of the second metadata file.

12. A recording apparatus according to claim 1, wherein the first information includes a first file structure, the second information includes a second file structure, the first address information includes a first logical volume descriptor, and the second address information includes a second logical volume descriptor.

13. A host apparatus used in a recording apparatus which records second address information and second information in an information recording medium to update first information recorded in the information recording medium to the second information by updating first address information recorded in the information recording medium to the second address information,

wherein the first address information includes a first address indicating at least a part of locations of the information recording medium at which the first information is recorded,

the second address information includes a second address indicating at least a part of locations of the information recording medium at which the second information is to be recorded,

the host apparatus includes a system control section for controlling the drive apparatus including a head section for performing a recording operation or a

reproduction operation for the information recording medium and a drive control section for controlling the head section,

the system control section generates an update instruction including a third address indicating at least a part of the locations of the information recording medium at which the first address information is recorded and the second address information as an update instruction for updating the first address information to the second address information, and outputs the update instruction to the drive apparatus.

14. A drive apparatus used in a recording apparatus which records second address information and second information in an information recording medium to update first information recorded in the information recording medium to the second information by updating first address information recorded in the information recording medium to the second address information,

wherein the first address information includes a first address indicating at least a part of locations of the information recording medium at which the first information is recorded,

the second address information includes a second address indicating at least a part of locations of the information recording medium at which the second information is to be recorded,

the drive apparatus includes a head section for performing a recording operation or a reproduction operation for the information recording medium and a drive control section for controlling the head section,

the drive control section receives an update instruction including a third address indicating at least a part of the locations of the information recording medium at which the first address information is recorded and the second address information,

the drive control section, in accordance with the update instruction, controls the head section to record the second address information in the information recording medium, generates disc management information including correlation information which correlates the first address information with the second address information, and controls the head section to record the disc management information in the information recording medium, and

the drive control section controls the head section to record the second information in the information recording medium in accordance with the second address.

15. A semiconductor integrated circuit used in a recording apparatus which records second address information and second information in an information recording medium to update first information recorded in the information recording medium to the second information by updating first address information recorded in the information recording medium to the second address information,

wherein the first address information includes a first address indicating at least a part of locations of the information recording medium at which the first information is recorded,

the second address information includes a second address indicating at least a part of locations of the information recording medium at which the second information is to be recorded,

the semiconductor integrated circuit is configured to control a head section for performing a recording operation or a reproduction operation for the information recording medium,

the semiconductor integrated circuit receives an update instruction including a third address indicating at least a part of the locations of the information recording medium at which the first address information is recorded and the second address information,

the semiconductor integrated circuit, in accordance with the update instruction, controls the head section to record the second address information in the information recording medium, generates disc management information including correlation information which correlates the first address information with the second address information, and controls the head section to record the disc management information in the information recording medium, and

the semiconductor integrated circuit controls the head section to record the second information in the information recording medium in accordance with the second address.

16. A recording method for recording second address information and second information in an information recording medium to update first information recorded in the information recording medium to the second information by updating

first address information recorded in the information recording medium to the second address information,

wherein the first address information includes a first address indicating at least a part of locations of the information recording medium at which the first information is recorded,

the second address information includes a second address indicating at least a part of locations of the information recording medium at which the second information is to be recorded,

the recording method comprising the steps of:

generating an update instruction including a third address indicating at least a part of the locations of the information recording medium at which the first address information is recorded and the second address information as an update instruction for updating the first address information to the second address information;

in accordance with the update instruction, recording the second address information in the information recording medium, generating disc management information including correlation information which correlates the first address information with the second address information, and recording the disc management information in the information recording medium; and

recording the second information in the information recording medium in accordance with the second address.

17. A method implemented in a host apparatus used in a recording apparatus which records second address information and second information in an information recording medium to update first information recorded in the information recording medium to the second information by updating first address information recorded in the information recording medium to the second address information,

wherein the first address information includes a first address indicating at least a part of locations of the information recording medium at which the first information is recorded,

the second address information includes a second address indicating at least a part of locations of the information recording medium at which the second information is to be recorded,

the method comprising the steps of:

generating an update instruction including a third address indicating at least a part of the locations of the information recording medium at which the first address

information is recorded and the second address information as an update instruction for updating the first address information to the second address information; and outputting the update instruction.

18. A method implemented in a drive apparatus used in a recording apparatus which records second address information and second information in an information recording medium to update first information recorded in the information recording medium to the second information by updating first address information recorded in the information recording medium to the second address information,

wherein the first address information includes a first address indicating at least a part of locations of the information recording medium at which the first information is recorded,

the second address information includes a second address indicating at least a part of locations of the information recording medium at which the second information is to be recorded,

the method comprising the steps of:

receiving an update instruction including a third address indicating at least a part of the locations of the information recording medium at which the first address information is recorded and the second address information;

in accordance with the update instruction, recording the second address information in the information recording medium, generating disc management information including correlation information which correlates the first address information with the second address information, and recording the disc management information in the information recording medium; and

recording the second information in the information recording medium in accordance with the second address.

19. A program implemented in a host apparatus used in a recording apparatus which records second address information and second information in an information recording medium to update first information recorded in the information recording medium to the second information by updating first address information recorded in the information recording medium to the second address information,

wherein the first address information includes a first address indicating at least a part of locations of the information recording medium at which the first information is recorded,

the second address information includes a second address indicating at least a part of locations of the information recording medium at which the second information is to be recorded,

the program comprising the steps of:

generating an update instruction including a third address indicating at least a part of the locations of the information recording medium at which the first address information is recorded and the second address information as an update instruction for updating the first address information to the second address information; and

outputting the update instruction.

20. A program implemented in a drive apparatus used in a recording apparatus which records second address information and second information in an information recording medium to update first information recorded in the information recording medium to the second information by updating first address information recorded in the information recording medium to the second address information,

wherein the first address information includes a first address indicating at least a part of locations of the information recording medium at which the first information is recorded,

the second address information includes a second address indicating at least a part of locations of the information recording medium at which the second information is to be recorded,

the program comprising the steps of:

receiving an update instruction including a third address indicating at least a part of the locations of the information recording medium at which the first address information is recorded and the second address information;

in accordance with the update instruction, recording the second address information in the information recording medium, generating disc management information including correlation information which correlates the first address information with the second address information, and recording the disc management information in the information recording medium; and

recording the second information in the information recording medium in accordance with the second address.

21. A reproducing apparatus for reproducing information recorded in an information recording medium,

wherein first information, second information, first address information, second address information and disc management information at least, are recorded in the information recording medium,

the second information is update information of the first information,

the first address information includes a first address indicating at least a part of locations of the information recording medium at which the first information is recorded,

the second address information is update information of the first address information, the second address information includes a second address indicating at least a part of locations of the information recording medium at which the second information is recorded, and

the disc management information includes correlation information which correlates the first address information with the second address information,

the reproducing apparatus comprising a host apparatus and a drive apparatus,

wherein the host apparatus includes a system control section for controlling the drive apparatus,

the drive apparatus includes a head section for performing a recording operation or a reproduction operation for the information recording medium and a drive control section for controlling the head section,

the system control section generates a first reproduction instruction including a third address indicating at least a part of the locations of the information recording medium at which the first address information is recorded as a first reproduction instruction for reproducing the first address information, and outputs the first reproduction instruction to the drive apparatus,

the drive control section receives the first reproduction instruction from the host apparatus, controls the head section to reproduce the second address information correlated with the first address information by referring to the correlation information in accordance with the first reproduction instruction, and outputs the reproduced second address information to the host apparatus,

the system control section receives the second address information from the drive apparatus, generates a second reproduction instruction including the second address as a second reproduction instruction for reproducing the second

information, and outputs the second reproduction instruction to the drive apparatus, and

the drive control section receives the second reproduction instruction from the host apparatus, controls the head section to reproduce the second information recorded in the information recording medium in accordance with the second reproduction instruction, and outputs the reproduced second information to the host apparatus.

22. A reproducing apparatus according to claim 21, wherein the disc management information further includes status information indicating whether the correlation information is valid or invalid, and

the drive control section determines whether the correlation information is valid or invalid by referring to the status information corresponding to the correlation information in accordance with the first reproduction instruction, controls the head section to reproduce the second address information correlated with the first address information and outputs the reproduced second address information to the host apparatus when it is determined that the correlation information is valid, and controls the head section to reproduce the first address information and outputs the reproduced first address information to the host apparatus when it is determined that the correlation information is invalid.

23. A drive apparatus used in a reproducing apparatus for reproducing information recorded in an information recording medium,

wherein first information, second information, first address information, second address information and disc management information at least, are recorded in the information recording medium,

the second information is update information of the first information,

the first address information includes a first address indicating at least a part of locations of the information recording medium at which the first information is recorded,

the second address information is update information of the first address information, the second address information includes a second address indicating at least a part of locations of the information recording medium at which the second information is recorded, and

the disc management information includes correlation information which correlates the first address information with the second address information,

the drive apparatus comprising:
a head section for performing a recording operation or a reproduction operation for the information recording medium; and
a drive control section for controlling the head section,
wherein the drive control section receives a first reproduction instruction including a third address indicating at least a part of the locations of the information recording medium at which the first address information is recorded, controls the head section to reproduce the second address information correlated with the first address information by referring to the correlation information in accordance with the first reproduction instruction, and outputs the reproduced second address information to a host apparatus,

the drive control section receives a second reproduction instruction including the second address, controls the head section to reproduce the second information recorded in the information recording medium in accordance with the second reproduction instruction, and outputs the reproduced second information to the host apparatus.

24. A semiconductor integrated circuit used in a reproducing apparatus for reproducing information recorded in an information recording medium,

wherein first information, second information, first address information, second address information and disc management information at least, are recorded in the information recording medium,

the second information is update information of the first information,

the first address information includes a first address indicating at least a part of locations of the information recording medium at which the first information is recorded,

the second address information is update information of the first address information, the second address information includes a second address indicating at least a part of locations of the information recording medium at which the second information is recorded, and

the disc management information includes correlation information which correlates the first address information with the second address information,

the semiconductor integrated circuit is configured to control a head section for performing a recording operation or a reproduction operation for the information recording medium,

the semiconductor integrated circuit receives a first reproduction instruction including a third address indicating at least a part of the locations of the information recording medium at which the first address information is recorded, controls the head section to reproduce the second address information correlated with the first address information by referring to the correlation information in accordance with the first reproduction instruction, and outputs the reproduced second address information to a host apparatus,

the semiconductor integrated circuit receives a second reproduction instruction including the second address, controls the head section to reproduce the second information recorded in the information recording medium in accordance with the second reproduction instruction, and outputs the reproduced second information to the host apparatus.

25. A reproducing method for reproducing information recorded in an information recording medium,

wherein first information, second information, first address information, second address information and disc management information at least, are recorded in the information recording medium,

the second information is update information of the first information,

the first address information includes a first address indicating at least a part of locations of the information recording medium at which the first information is recorded,

the second address information is update information of the first address information, the second address information includes a second address indicating at least a part of locations of the information recording medium at which the second information is recorded, and

the disc management information includes correlation information which correlates the first address information with the second address information,

the reproducing method comprising the steps of:

generating a first reproduction instruction including a third address indicating at least a part of the locations of the information recording medium at which the first address information is recorded as a first reproduction instruction for reproducing the first address information;

reproducing the second address information correlated with the first address information by referring to the correlation information in accordance with the first reproduction instruction;

generating a second reproduction instruction including the second address as a second reproduction instruction for reproducing the second information; and

reproducing the second information recorded in the information recording medium in accordance with the second reproduction instruction.

26. A method implemented in a drive apparatus used in a reproducing apparatus for reproducing information recorded in an information recording medium, wherein first information, second information, first address information, second address information and disc management information at least, are recorded in the information recording medium,

the second information is update information of the first information,

the first address information includes a first address indicating at least a part of locations of the information recording medium at which the first information is recorded,

the second address information is update information of the first address information, the second address information includes a second address indicating at least a part of locations of the information recording medium at which the second information is recorded, and

the disc management information includes correlation information which correlates the first address information with the second address information,

the method comprising the steps of:

receiving a first reproduction instruction including a third address indicating at least a part of the locations of the information recording medium at which the first address information is recorded;

reproducing the second address information correlated with the first address information by referring to the correlation information in accordance with the first reproduction instruction;

receiving a second reproduction instruction including the second address; and

reproducing the second information recorded in the information recording medium in accordance with the second reproduction instruction.

27. A program implemented in a drive apparatus used in a reproducing apparatus for reproducing information recorded in an information recording medium, wherein first information, second information, first address information, second address information and disc management information at least, are recorded in the information recording medium,

the second information is update information of the first information,

the first address information includes a first address indicating at least a part of locations of the information recording medium at which the first information is recorded,

the second address information is update information of the first address information, the second address information includes a second address indicating at least a part of locations of the information recording medium at which the second information is recorded, and

the disc management information includes correlation information which correlates the first address information with the second address information,

the program comprising the steps of:

receiving a first reproduction instruction including a third address indicating at least a part of the locations of the information recording medium at which the first address information is recorded;

reproducing the second address information correlated with the first address information by referring to the correlation information in accordance with the first reproduction instruction;

receiving a second reproduction instruction including the second address;
and

reproducing the second information recorded in the information recording medium in accordance with the second reproduction instruction.

28. An information recording medium having first information, second information and disc management information recorded thereon,

wherein the second information is update information of the first information,

the disc management information includes correlation information which correlates first address information with second address information,

the first address information includes a first address indicating at least a part of locations of the information recording medium at which the first information is recorded, and

the second address information includes a second address indicating at least a part of locations of the information recording medium at which the second information is further recorded.

29. An information recording medium according to claim 28, further having duplication information of the second address information recorded thereon, wherein

the disc management information further includes status information indicating whether the correlation information is valid or invalid,

the status information is set to indicate that the correlation information is valid when the first address information has been updated to the second address information.